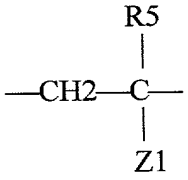
CLAIMS

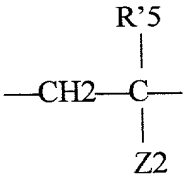
1) A cement slurry intended to be set in a wellbore through at least one geologic formation having a certain permeability, characterized in that it comprises cement, at least one mineral filler, water and a determined amount of at least one polymer with hydrophilic (Hy) and hydrophobic (Hb) units in aqueous solution, said hydrophobic units (Hb) containing C1-C30 alkyl, aryl or alkyl-aryl groups, said polymer having the following structure : —(Hb)—(Hy)— with a statistical distribution, and :

- Hy has the following form :



where R5 is H or CH3, and Z1 is COOH or CONH2 or CONHR1SO3$^-$, or CONHR″1, R″1 is CH3 ;

- Hb has the following form :



where R'5 is H or CH3 and Z2 is COOR7, C6H4SO3H, COOR'1, CONR1R'1 or CONR1R7, R7 being a non-ionic surfactant consisting of an alkyl polyoxyethylene chain, R1 is H or a C1-C30 alkyl, aryl or alkyl-aryl radical, and R'1 is a C1-C30 alkyl, aryl or alkyl-aryl radical.

2) A slurry as claimed in claim 1, wherein said polymer has a molecular mass ranging between 10^4 and 10^7 daltons and a proportion of hydrophobic units Hb ranging between 0.5 and 60 %.

3) A slurry as claimed in any one of the previous claims, comprising at least one of the polymers selected from the group consisting of :

- HMPAM, where R5 is H and Z1 is CONH2, R'5=CH3 and Z2 is COOR'1 with R'1=C9H19,
- S1, S2 where R5 is H and Z1 is CONH2, R'5=H and Z2 is C6H4SO3H,
- Hb1 where R5 is H, Z1 is COOH, R'5 is H and Z2 is COOR'1 with R'1 being C4.

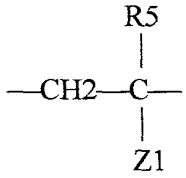
4) A slurry as claimed in any one of the previous claims, wherein the mineral filler consists of silica whose grain size ranges between 5 and 200 μm and microsilica whose grain size ranges between 0.1 and 20 μm.

5) A slurry as claimed in claim 3, wherein said polymer S1 or S2 is combined with polymer HMPAM.

6) A slurry as claimed in claim 3, wherein said polymer is Hb1 at a concentration ranging between 0.5 and 5 % by weight.

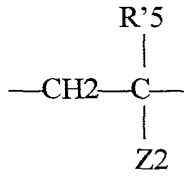
7) An additive for cement slurry, characterized in that it essentially comprises a polymer with hydrophilic (Hy) and hydrophobic (Hb) units in aqueous solution, said hydrophobic units (Hb) containing C1-C30 alkyl, aryl or alkyl-aryl groups, said polymer having the following structure :

- Hy has the following form :



where R5 is H or CH3, and Z1 is COOH or CONH2 or CONHR1SO3$^-$, or CONHR″1, R″1 is CH3 ;

- Hb has the following form :



where R'5 is H or CH3 and Z2 is COOR7, C6H4SO3H, COOR'1, CONR1R'1 or CONR1R7, R7 being a non-ionic surfactant consisting of an alkyl polyoxyethylene chain, R1 is H or a C1-C30 alkyl, aryl or alkyl-aryl radical, and R'1 is a C1-C30 alkyl, aryl or alkyl-aryl radical.